ALBERTANS & CLIMATE CHANGE

A Summary of Actions to Date

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Introduction

Responding to climate change is a huge task, demanding a wide range of innovative partnerships that are flexible, dynamic and able to adapt to meet the demands of changing scenarios.

The following pages summarize some key actions that Albertans are taking to reduce greenhouse gas emissions, under seven thematic headings:

- Conserve
- Lead by Example
- Capture and Store
- Innovate
- Develop Tools
- Adapt
- Influence

A Summary of Actions to Date

Conserve

Conserving energy - through energy efficiency or alternative power sources - is one of the most cost-effective ways of reducing greenhouse gas emissions. The Alberta government is encouraging Albertans to pursue a range of opportunities that can reduce energy consumption and save them money, as well as reduce the related emissions.

Best practices for farm, food processors

Alberta Agriculture, Food and Rural Development is working with the agriculture sector and with the Alberta Food Processors Association to develop education and awareness programs. These programs are aimed at food producers and processors to educate them on best practices and new technologies to reduce greenhouse gas emissions on farms.

Natural gas for Metis Settlements

The Alberta government, under a cost-sharing rural gas grant program, has brought natural gas service for the first time into Buffalo Lake and Kikino Metis Settlements in northern Alberta. Natural gas is cleaner burning and less carbon-intensive than the diesel and propane formerly used on the Settlements.

Less wasteful industry

The Alberta government is working with stakeholders to present a conference series on the redesign of industrial processes to mimic natural systems, optimize the use of resources and essentially eliminate waste. These "industrial ecology" conferences will provide local industry with access to international experts and act as a platform to share information, build capacity and develop networks.

Alberta eMission Banff and green corridors

Transportation is a major source of greenhouse gas emissions. This project, lead by ATCO Gas, involves the conversion of 60 large passenger vans and shuttles to run on

natural gas in the "green corridor" between Calgary and Banff, with natural gas refuelling stations in both those centres.

www.climatechangecentral.com

Bring us your older cars

Selected Calgarians can get a one-year transit pass or a $500 credit for a newer car when they retire their more polluting pre-1988 cars. This program, developed by the multi-stakeholder Clean Air Strategic Alliance, could be extended across the province once impact, costs and feasibility have been evaluated.

www.casahome.org/casa_library/bygroup.asp?idnumber=25

Syncrude Canada Ltd. takes the challenge

More than 600 employees of Syncrude Canada Ltd., one of several Alberta energy companies taking part in the Action By Canadians on Climate Change program, have pledged to reduce their personal greenhouse gas emissions by an average of 2860 kg. (The minimum pledge required by the program is 2000 kg.)

www.energy.ca/abc/index.html

Winds of change

Since 1999 there has been a tenfold increase in the amount of electricity generated from wind energy in Alberta (to more than 200 megawatts from 21 megawatts). Power generated by these wind turbines reduces greenhouse gas emissions by displacing other sources of electricity - primarily older, more fossil fuel intensive facilities. Alberta expects to see this trend to increased wind capacity continuing over the coming years.

www.energy.gov.ab.ca

ClimateWise: a community program

Designed and originally implemented by the Clean Air Strategic Alliance, a multi-stakeholder group, ClimateWise is a community-based public outreach pilot program on climate change and energy efficiency.

www.casahome.org

Oxford Properties Group Inc.

Oxford Properties Group Inc. in Calgary invested extensively in energy efficiency when developing its multi-tenant, 46-floor Canterra Tower office complex. Energy conservation efforts "avoided" $1.5 million in operating costs, reduced energy consumption by 30 per cent and the building's total greenhouse gas emissions decreased by 28 per cent. As a result of this leading-edge environmental management, Canterra Tower has qualified for registration as an ISO 14001 building.

www.oxfordproperties.com

Suncor Energy's focus

Suncor Energy has had a focus on energy efficiency and emissions reduction over the past decade. The company's energy intensity has decreased by 12.5 per cent and its greenhouse gas emissions have gone down by 30 per cent per unit of production.

www.suncor.com

Capital Health cuts emissions

Capital Health Authority's University of Alberta Hospital in Edmonton reduced its total 1999 emissions to eight per cent below 1996 levels. That's the equivalent of more than 6,000 tonnes of carbon dioxide equivalent. And it was achieved through energy efficiency actions. The hospital is also committed to long-term energy efficiency targets, winning a Voluntary Challenge and Registry Inc. Leadership Award in 2000 for its efforts.

www.cha.ab.ca

Burlington Resources a winner

Burlington Resources, an upstream oil and gas company headquartered in Alberta, was awarded a VCR Inc. Leadership Award in 2000 for its public and employee outreach education program on greenhouse gas reductions, its exceptional action plan and progress report and for reducing its production energy intensity (by 48 per cent) and its product carbon intensity (by 37 per cent).

www.vcr-mvr.ca/ClientDetail.cfm?No=580

Cutting flaring, venting

Conoco Canada Ltd. has cut its flaring and venting of natural gas by more than 90 per cent, by modifying its existing processes and equipment. The company recouped the related technology investment in two months, and now recovers natural gas volumes worth more than $1 million per year.

Least-cost solutions to greenhouse gas emission control are a cornerstone of Alberta's greenhouse gas reduction strategy.

www.vcr-mvr.ca/ClientDetail.cfm?No=2155

Destination Conservation in schools

Sponsored by private industry along with the federal government, this program is delivered in more than 50 Edmonton schools, increasing awareness and encouraging conservation alternatives that lead to improved energy, water and waste management practices at school and at home. Alberta companies involved in Destination Conservation projects include EPCOR, Suncor Energy, PetroCanada and TransCanada Pipelines.

www.dcplanet.org

Alerting the business community

The Alberta government has worked with the Pembina Institute to encourage small and medium enterprises to take action on climate change, become more competitive and reduce energy costs. Interested companies or groups were offered workshops with a focus on case studies and success stories.

www.pembina.org

Removing barriers to small-scale generation

The Alberta government is working with the electricity sector to facilitate the installation of new, smaller scale electricity generation that is more responsive to the electricity needs of the consumer. This will ultimately result in fewer greenhouse gas emissions.

www.energy.gov.ab.ca/com/Electricity/Key+Publications/Key+Publications/New+Generation+Brochure+-+Section+1.html

Lead by Example

The Alberta government and municipalities are demonstrating to Albertans, by their own actions, that greenhouse gas emission reductions can bring energy and cost savings.

Walking the talk

In 1995 the Alberta government announced that within five years it would reduce emissions from its operations by 14.1 per cent below 1990 emission levels. By end of 2000 the Alberta government had exceeded its target and reduced emissions by 22 per cent below 1990 levels.

Alberta a Canadian leader

The Alberta government is the only government in Canada to have won a national leadership award - three times to date - from the Voluntary Challenge and Registry Inc., a private/public partnership established in 1997 to help reduce Canada's greenhouse gas emissions.

www.vcr-mvr.ca/ClientDetail.cfm?No=47

"Care-fuel" driving

The Alberta government will start a pilot fuel efficiency program in 2002 to train employees in vehicle-related energy efficiency (maintenance, operation and driver behaviour).

Energy efficiency in schools

New and modernized schools in Alberta must meet the highest standards and guidelines for energy efficient technologies and materials.

Environmentally–friendly office

Climate Change Central's Calgary office holds Environment Canada's first Ecologo certificate. High efficiency office lighting with sensors that switch power off when a room is empty, innovative recycled floor coverings and office furniture are among the energy-saving features that helped Climate Change Central gain this certification.

Grande Prairie, heat and power

The City of Grande Prairie and Climate Change Central are evaluating the potential of recovering waste heat from Canfor's co-generation plant at its sawmill site. Other participants include ATCO Gas, Canadian Gas and Electric (a partner in the co-generation facility) and the Federation of Canadian Municipalities. The project will examine the feasibility of using excess steam energy to heat nearby buildings in the city and determine the most efficient type and cost of systems to transfer excess heat - in the form of hot water - to nearby buildings.

Calgary's *Ride the Wind* project

The City of Calgary's light rail transit now runs on wind-generated electricity provided by Vision Quest Windelectric Inc. The city's C-trains require 21,000 MWh of electricity a year to keep them going. Now, that electricity is 100 per cent greenhouse gas emission-free.

www.calgarytransit.com/environment/environment.html

Edmonton's CO_2RE strategy

The City of Edmonton is working with local stakeholders to develop a community-wide greenhouse gas reduction strategy. This strategy will support the vision of Edmonton having zero net greenhouse gas emissions by 2050.

www.co2re.ca

capture and store

Carbon dioxide, once considered a waste product, is fast increasing in value. The Alberta government, energy industry and research community are working together on innovations that enhance petroleum recovery using this common greenhouse gas. Another "win-win" opportunity, in Alberta's search to balance a healthy environment with a healthy and sustainable economy.

Carbon management strategy

The Alberta government has developed a carbon management strategy to be a framework for industry-government research, to involve partnerships with other jurisdictions where feasible and focus on deployment and demonstration of carbon management technologies in the energy sector.

Investigating carbon dioxide storage

Through the Alberta Energy Research Institute, the Alberta government has committed to invest $150,000 in the IEA Weyburn CO_2 Monitoring and Storage Project. Main goal is to verify the long-term storage capacity of carbon dioxide in geological formations. In the short-term, the project will identify new, cost effective ways to track the underground movement of carbon dioxide. Other participants include: Natural Resources Canada; Saskatchewan Energy and Mines; IEA Greenhouse Gas Programs; University of Alberta; British Geological Survey; Danish Geological Survey and the Lawrence Berkeley National Laboratory.

www.ieagreen.org.uk/weyburn5.html

Capture costs

Climate Change Central has co-ordinated funding from Western Economic Diversification and Alberta Environment to support a project led by the Canadian Energy Research Institute on cost estimates for injecting carbon dioxide into underground formations in Alberta. Goal of the $300,000 project is to identify the costs of capturing emissions from large emitters and storing them in deep geological formations instead of release into the atmosphere.

Near-zero coal

The Alberta government is partnering with an international consortium of companies to investigate a Los Alamos National Laboratories process for electricity generation with near-zero emissions.

Flue scrubbing

The Alberta government is supporting a University of Regina study into new technologies that will scrub carbon dioxide from the flue gas of retrofitted existing fossil fuel generation stations.

Methane recovery

The Alberta Research Council, with the support of provincial, national and international organizations, is starting a five-well pilot project that will test the recovery of methane, by injecting carbon dioxide and nitrogen into Alberta's otherwise unmineable coal beds.

www.arc.ab.ca

Innovate

Alberta, as a key player in today's global economy, is committed to developing and adopting new technologies and innovation. Organizations like the Alberta Energy Research Institute and Climate Change Central are supporting the development and use of technologies that will help reduce greenhouse gas emissions, in Alberta and abroad.

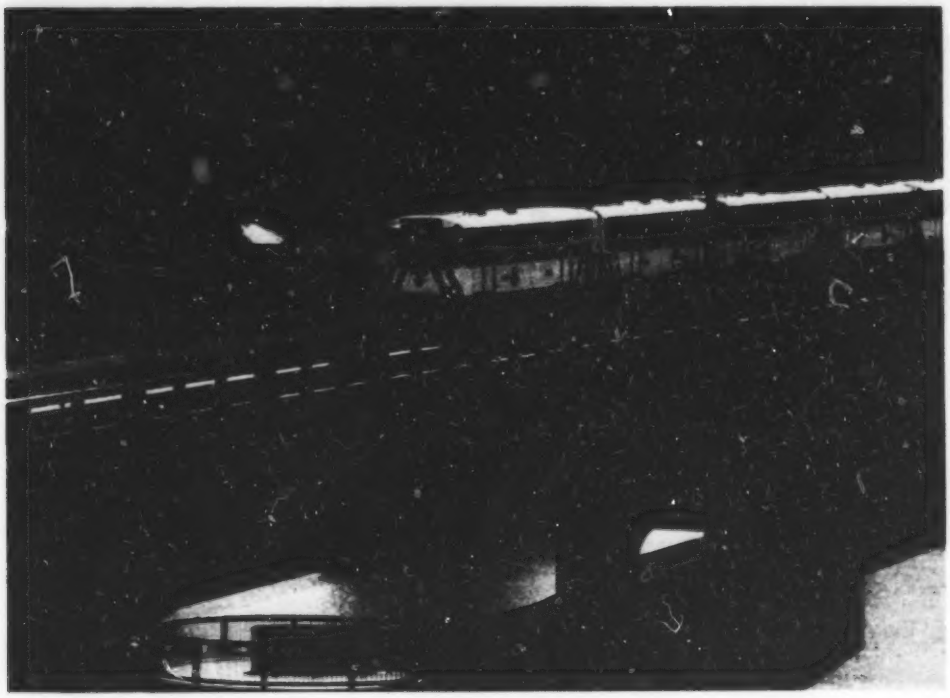
Pooling resources

Climate Change Central is a non-financial contributing partner in the installation of gas-fired micro-turbines at an Olympic-size swimming pool at the Southern Alberta Institute of Technology's campus in Calgary. The two Clean Heat and Power systems -

which are about the size of a pop machine - provide base heating as well as generating electricity to help power the pool facility. Cogeneration will lower annual greenhouse gas emissions on the campus by 27,500 tonnes of carbon equivalent.

Smarter transportation

Intelligent transportation systems cut greenhouse emissions by improving traffic flow and minimizing congestion. The Alberta government provides municipalities with dollars to tackle congestion through a variety of responses including early incident detection and "real-time" traffic signals.



Growing greener?

Climate Change Central and Mariah Energy, in partnership with the National Research Council, Alberta Research Council, a host greenhouse, the City of Medicine Hat and Shell Canada Ltd. will install six microturbines in a Medicine Hat area greenhouse. The microturbines generate electricity and supply the greenhouse with heat. Surplus electricity is sold to the grid and the carbon dioxide produced is piped into the greenhouse to boost growth of its tomatoes, green peppers and cucumbers.

www.mariahpower.com

TransCanada Pipelines goes micro

TransCanada PipeLines (TCPL) and Climate Change Central in partnership with Natural Resources Canada and the greenhouse gas technology centre of the United States Environmental Protection Agency have proposed a first-of-its kind microturbine heat and power system on a natural gas pipeline. The project involves installation of three microturbines at TCPL's Hussar compressor station east of Calgary to deliver site power and recover waste heat from the turbines' exhaust.

Develop Tools

Harnessing the power of the market to achieve significant and sustained reductions in greenhouse gas emissions is growing rapidly worldwide. The Alberta government is working with partners in business, universities and technical colleges on pilot programs that explore least-cost emission reductions.

Continuously improving Alberta's electricity sector

The Alberta government has asked the Clean Air Strategic Alliance (CASA) to recommend a new air emissions management framework for the electricity generation sector. It is anticipated that by mid-2003, CASA will provide recommendations on innovative and effective means of managing air emissions (including carbon dioxide) from new and existing generation facilities.

Gas plant energy efficiency assistance

Alberta Energy is involved in a three-year program that provides royalty credit to gas processing plant operators who develop combined heat and power facilities. This co-generation reduces the waste of fossil fuels and results in significantly lower greenhouse gas emissions than conventionally produced electricity.

Going global (China, Latin America)

To promote clean development mechanisms and their implementation, the Alberta and federal governments, non-governmental organizations and private sector companies went on an exploratory mission to China in 2001. The mission objective was to increase awareness of how Alberta companies can help reduce China's greenhouse gas emissions. A similar mission to Latin America was held in 2002.

Flaring reductions

Gas flared in Alberta in 2000 was more than one-third (38 per cent) below 1996 levels. This gas is now either being conserved or is being used to generate electricity. Harnessing this gas that would otherwise have been released into the atmosphere was made possible through the Alberta government waiving its royalty.

www.eub.gov.ab.ca

Call us GERT

The Alberta government was a member of the Greenhouse Gas Emission Reduction Trading Pilot (GERT), a voluntary program to tests emission reduction credit trading in Canada and encourage early action projects. Twelve GERT projects recorded emission reductions totalling more than 792,000 tonnes of carbon dioxide before the pilot ended in 2001.

www.gert.org

Costs of change

The Alberta government plays an active part in Canada's national climate change process, to ensure the environmental and economic implications for Alberta are appropriately represented.

Enhancing the biosphere

Alberta companies and the Alberta government are among the founding partners of BIOCAP, a national, not-for-profit research organization to facilitate and coordinate research into how Canada's biosphere - principally forests and agricultural soils - can be improved and store more carbon. BIOCAP brings together the expertise of more than 120 researchers in science, engineering and social sciences.

www.biocap.com

Forest carbon sequestration: the Canadian workshops

Pollution Probe hosted a series of five workshops (with one in Alberta) on forest carbon management in Canada. The first provided an overview of the potential for carbon sequestration in Canada's forests. The second began to examine the most promising opportunities. The third - hosted by BIOCAP Canada - brought scientists and researchers from across Canada to determine research priorities. The fourth examined barriers and incentives to implementing carbon sequestration. Final workshop charted a path forward for Canada to capitalize on forest sequestration opportunities.

Carbon sinks and agriculture

The Alberta government, Climate Change Central, an inter-governmental biological sinks committee and the agriculture sector are examining agricultural greenhouse gas reduction and removal opportunities through emissions credit trading. An Alberta Agricultural Land Use Registry Pilot will help producers get credit for early action, if such a trading mechanism is ultimately developed.

Simulated trading

Climate Change Central hosted Western Canada's first greenhouse gas emissions trading simulation in 2001. The event gave participants hands-on experience of virtual trading, and an understanding of how future emissions trading markets might operate, and the possible impacts of alternative regulatory policies on the cost of compliance for Alberta firms operating in North American and global markets.

Emission trading workshops

In early 2002 Climate Change Central, in partnership with the Pembina Institute, hosted three half-day workshops on domestic emission trading for representatives of Alberta agriculture, forestry, municipalities and environmental non-government organizations.

www.climatechangecentral.com/emissions_trading/default.html

TransAlta and EPCOR offset emissions

EPCOR and TransAlta have both committed to offset the greenhouse gas emissions associated with their proposed new coal-fired generation facilities down to the level of an equivalent natural gas facility. To achieve this, EPCOR and TransAlta will be supporting projects throughout Alberta and the rest of the world with real and measurable greenhouse gas emission reductions. These commitments will result in a 53 to 63 per cent improvement in emissions related to these facilities.

Trading the wind

The first greenhouse gas emissions trade involving a wind energy project in Canada has been registered through the Greenhouse Gas Emission Reduction Trading Pilot. The trade involved Vision Quest Windelectric and ENMAX Corporation and allows ENMAX to initiate its Greenmax Program, a Canadian first in residential green power purchases.

TransAlta trades transatlantically

In 2000, TransAlta completed the first-ever transatlantic trade of carbon dioxide emissions reductions, with the German electric company HEW. The 24,000 tonne emissions reduction trade gained from HEW wind energy facilities in Hamburg is equal to the annual emissions from approximately 3,000 vehicles. TransAlta has already reduced its net Canadian emissions by more than three million tonnes below its 1990 emissions level. The company says it will reduce its Canadian net greenhouse gases emissions to zero by 2024.

www.transalta.com

Adapt

The world's climate is changing and will continue to do so. The Alberta government is working with resource managers, municipalities, the agriculture sector and other governments on the research needed for sound decision-making and risk management associated with climate change.

Supporting adaptation on the prairies

The Alberta government participates in the Prairie Adaptation Research Collaborative, a federal/regional initiative to fund research on climate change adaptation in the prairies. To date it has funded 37 projects worth more than $1.2 million.

www.parc.ca

Impacts and adaptation research

To help assess the science, impacts and adaptation aspects of climate change in Alberta, the Alberta government has funded projects on how the province's conifer populations respond to potential climate change moisture stress, tree growth and development and on assessing extreme weather events on the prairies.

Influence

The Alberta government works with the federal government, other provinces and territories to see that Canada's national and international climate change positions are efficient, effective and equitable and also delivers conservation and climate change education and outreach in partnership with Climate Change Central and others.

A national window

The Alberta government continues to co-lead Canada's national climate change process through the National Air Issues Co-ordinating Committee on Climate Change. This committee helps ensure that all governments in Canada work co-operatively on climate change and that Ministers of Environment and Energy are briefed on issues relating to the Kyoto Accord.

www.nccp.ca

International negotiations

Alberta's Environment Minister and key staff members were part of the Canadian delegation that attended the Bonn negotiations in 2001 on the Kyoto Accord.

Climate change in schools

The Alberta government has initiated a pilot, school-based activity and awareness campaign on climate change for eight Grade 5 classes in Lethbridge. A teacher resource package that includes lesson plans has been created by Alberta Environment to support the program. This pilot is being expanded with links to Social Studies and Health, Grades 4 and 6.

Food for thought

Alberta Agriculture, Food and Rural Development and the Alberta Environmentally Sustainable Agriculture Council have produced a series of information bulletins on greenhouse gases, and a workbook on greenhouse gas mitigation for the agricultural manager.

www.agric.gov.ab.ca/sustain/aesaprog.html

There's the Hub

Climate Change Central will serve as Alberta's public education and outreach regional hub for climate change in Alberta. The Hub will carry out regional activities; identify gaps and support activities to address them; identify and co-ordinate local partners; provide training regionally and record and share knowledge on pilot programs.

www.climatechangecentral.com/peo_hub/default.html

SEEDS and *Creating a Climate of Change*

Creating a Climate of Change is a comprehensive package of instructional resources for Canadian high school students, including a 54-minute video, teacher's resource guide, transparencies and CD-Rom. Developed by the Calgary-based SEEDS Foundation, the program is designed to encourage critical thinking and the development of strategies to respond to the prospect of global warming and climate change.

www.greenschools.ca/climate/brochure.html

Competitive advantages

Climate Change Central is sponsoring an Alberta high school competition to develop practical solutions in response to climate change. Proposals can range from technical improvements, resource restructuring and public outreach programs to development of new technologies. Climate Change Central will then partner with industry so that winners can implement their projects. Winning proposals to be displayed at a Climate Change Fair during Environment Week.

Science Alberta Foundation

The Science Alberta Foundation website designed to inspire Alberta's future scientists and to bring science to life in school, community, industry and the home. Making Sense of Climate Change is the theme of the foundation's province-wide climate change awareness campaign in 2002.

www.sciencealberta.org